

## REMARKS

In the Office Action dated October 21, 2002, claims 4-8 and 10-25 are pending. Claims 4-8 and 10-13 are under consideration. Claims 14-25 have been withdrawn from consideration. Claims 4-6, 8, 10, and 11 are rejected under 35 U.S.C. §102(b) as allegedly anticipated by U.S. Patent No. 5,801,142 (Zain et al.). Claims 12 and 13 are rejected under 35 U.S.C. §103(a) as allegedly unpatentable over the '142 patent in view of U.S. Patent No. 6,167,888 (Tuszynski et al.). Claims 4-8 and 10-13 are rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to satisfy the written description requirement. Claims 4-8 and 10-13 are also rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking enabling support. Additionally, claims 4-8 and 10-13 are rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite.

This Response addresses each of the Examiner's rejections. Favorable consideration of all pending claims is therefore respectfully requested.

Claims 14-25 have been canceled without prejudice by way of the instant amendment in response to the restriction requirement. Applicants reserve the right to file one or more divisional applications directed to the subject matter of these canceled claims.

With respect to the §102(b) rejection of claims 4-6, 8, 10 and 11 based on U.S. Patent No. 5,801,142 (Zain et al.), the Examiner states that the '142 patent teaches the mts-1 protein of the instant claims. The Examiner further states that, as the ability of the protein to form multimers is an inherent property of the protein, Applicants' discovery of this property does not render the multimers novel.

In response, Applicants respectfully submit that the instant claims are not directed to

isolated Mts1 proteins, but to isolated multimeric Mts1 protein complexes and related pharmaceutical compositions. While the ability to form multimers may be an inherent property of Mts1 proteins, there is no teaching or suggestion in the '142 patent to isolate the Mts-1 multimers because there is simply no recognition in the '142 patent of the property of Mts1 proteins to form multimers. In contrast, the present inventors have uniquely recognized that Mts1 proteins form multimers and that the neurogenic activity of Mts1 proteins are associated with the multimeric forms of the protein, as opposed to the monomeric form and dimeric form of the protein. See, e.g., the paragraph bridging pages 36-37; and page 38, lines 4-17. The specification further teaches how multimeric forms of an Mts-1 protein can be isolated. See, e.g., the paragraph bridging pages 13-14; and the paragraph bridging pages 36-37.

Accordingly, it is respectfully submitted that the '142 patent does not teach isolated multimeric Mts1 protein complexes, as presently claimed. Withdrawal of the rejection under §102 based on the '142 patent is respectfully requested.

Claims 12 and 13 are rejected under 35 U.S.C. §103(a) as allegedly unpatentable over the '142 patent in view of U.S. Patent No. 6,167,888 (Tuszynski et al.). It is observed that claims 12 and 13 are directed to pharmaceutical compositions comprising an isolated multimeric Mts1 protein complex and a neurotrophic factor.

The Examiner admits that the '142 patent fails to teach neurotrophic factors or co-administration of such factors with Mts-1. However, the Examiner contends that the '888 patent teaches that bFGF, NGF, CNTF, BDNF, NT3, NT4, and IGF-I are neurotrophic factors, and that some of these factors stimulate growth of nerve cells and therefore can be used to treat spinal cord injury. The Examiner concludes that it would have been *prima facie* obvious to one of

ordinary skill in the art to combine the teachings of the '142 patent with the '888 patent to arrive at the pharmaceutical compositions of claims 12-13.

Applicants respectfully submit that neither the '142 patent nor the '888 patent teaches or suggests making an isolated multimeric Mts1 protein complex, which is a requisite component of the pharmaceutical compositions of claims 12-13. Therefore, the pharmaceutical compositions of claims 12-13 are not obvious in view of the '142 patent and the '888 patent. Withdrawal of the §103 rejection based on the '142 patent in view of the '888 patent is therefore respectfully requested.

Claims 4-8 and 10-13 are rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to satisfy the written description requirement.

The Examiner recognizes that the instant claims are drawn to multimers of Mts-1 proteins. The Examiner contends that the specification only describes two Mts1 proteins. The Examiner contends that there is no description of the required structural features of Mts1 proteins, or of the conserved regions of Mts1 proteins that would be critical for function. Therefore, the Examiner is of the opinion that the specification has not disclosed sufficient species or common structural features of Mts1 proteins such that one skilled in the art would conclude that Applicants were in possession of the genus of proteins that could be described as "Mts1 proteins".

Furthermore, with respect to claim 6, in which the Mts1 protein is characterized as a "wild type" Mts1 protein, the Examiner contends that the specification has described only one such protein, but has not set forth the characteristics of wild-type proteins so that one of skill in the art could recognize a protein as "wild type". The Examiner contends that there is no way to

identify wild-type proteins without explicit disclosure of their precise sequences.

In response, Applicants respectfully submit that the specification has adequately described representative species of Mts1 proteins. Specifically, the specification has exemplified two wild type Mts1 proteins, i.e., the human Mts1 protein as set forth in SEQ ID NO: 1 and the murine Mts-1 protein as set forth in SEQ ID NO: 2, as well as Mts1-del75 and Mts-4S, which are functional derivatives of wild type Mts1 proteins. The specification has also described how to make and use multimeric complexes of these wild type Mts1 proteins or functional derivatives. Applicants should not be required to provide sequences of each species within the claimed genus in order to satisfy the written description requirement. Therefore, Applicants respectfully request that the Examiner reconsider and withdraw the rejection under §112, first paragraph (written description).

Claims 4-8 and 10-13 are also rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking enabling support. The Examiner contends that the specification, while enabling for mouse and human Mts-1 proteins, does not reasonably provide enablement for any and all variants of Mts-1 proteins.

Applicants respectfully submit that the specification teaches how to make and use isolated multimeric complexes of two wild type Mts1 proteins, i.e., the human Mts1 protein as set forth in SEQ ID NO: 1 and the murine Mts-1 protein as set forth in SEQ ID NO: 2, as well as multimeric complexes of Mts1-del75 and Mts-4S, which are functional derivatives of wild type Mts1 proteins. The specification also teaches how the function of a Mts1 protein derivative can be determined. See, e.g., page 10, line 29 to page 31, line 4. Based on the present teaching, those skilled in the art would be able to make and use multimeric complexes of any wild type

Mts1 protein or functional derivatives of a wild type protein. Therefore, the rejection under §112, first paragraph is overcome. Withdrawal of the rejection is therefore respectfully requested.

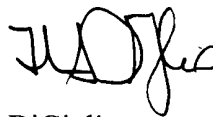
Claims 4-8 and 10-13 are rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite.

The Examiner contends that the claims are indefinite for identifying the protein merely as "Mts1 protein". The Examiner states that the claims should refer to a sequence presented in the sequence listing.

Applicants respectfully submit that the meaning of the term "Mts1 protein" is clear to those skilled in the art in light of the specification, e.g., at page 10, lines 22-28. Therefore, it is respectfully submitted that the claims are not indefinite. Withdrawal of the rejection under §112, second paragraph, is therefore respectfully requested.

In view of the foregoing amendments and remarks, it is firmly believed that the subject application is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,



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